

Serial No. 09/235,387
Art Unit 2665
Response to office action mailed June 24, 2005

Remarks

This response is being submitted under 37 CFR 1.34. A new Power of Attorney will be submitted shortly.

An aspect of the invention is to divide the network into a core portion wherein non-real time traffic is carried only over VPCs provisioned with dynamic bandwidth allocation and a minimum guaranteed bandwidth and without applying traffic management to the individual VCCs. The dynamic bandwidth allocation allows non-real time traffic of different service classes, which is bursty and therefore unpredictable in nature, to be carried effectively over a common VPC in an efficient manner. All the traffic management of the individual VCCs to the network edge where the lower aggregate bandwidths allow the implementation of sophisticated per-VC intelligent traffic management functions in a highly cost-effective manner. This concept is illustrated quite clearly in Figures 1 and 2 of the drawings. One of the advantages of this arrangement is that it makes the networks much more easily scaleable. The core can be expanded simply by adding additional nodes and provisioning additional VPCs between the new nodes.

The claims have been amended in part to better reflect this concept. New claim 33 has been added.

The Examiner's primary reference Awdeh is only concerned with controlling the traffic over end-to-end connections, referred to in the present application as virtual channel connections VCCs. There is no discussion in Awdeh of the use of VPCs, or virtual path connections, which carry of a plurality of VCCs. Awdeh shows multiple VCCs being multiplexed onto a "link", but that is clearly not the same as a VPC. A link is a physical connection. By its nature ATM is a connection-oriented network that uses statistical multiplexing to allow a number of channels to be carried over the same physical link by associating the virtual channels with cells that are interleaved on that link. A virtual path connection is made up of groups of cells, which while associated with different virtual channel connections, have a common destination, or at least intermediate destination, and which while associated with the virtual path connection can be routed by the network nodes in the same manner. In practice, the cells have a VCI (virtual channel identifier) and VPI (virtual path identifier). Groups of cells belonging to the same VPC will have different VCIs, but a common VPI. While they are being carried over the

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VPC, only the VPI is used for routing purposes. Awdeh is completely silent as to the use of VPCs. Awdeh is only concerned with VCCs.

Carr discloses an ATM network employing a VPC with traffic shaping. However, in Carr it appears that the VPC is static in nature, and that all the traffic, both real-time and non-real time, is sent over a common VPC (see Figure 4). The two main groups contemplated in Figure 4 of Carr (see col. 3, line 19) are real-time and non-real time. However, this is an ineffective solution due to the fundamentally different nature of non-real time traffic, which is inherently bursty and unpredictable in nature, and real-time traffic, which is more uniform and where cell delay is critical.

The concept of using dynamic bandwidth allocation on virtual path connections as the paths within a core network, and wherein the non-real time traffic is conveyed over these VPCs is clearly novel and not shown in Awdeh or Carr, or a combination thereof. In effect, the applicants have realized that the application of an ABR service category to a VPC permits the VPC to carry all non-real time traffic in an efficient manner, leading to an efficient highly scalable network. By mixing real time and non-real time traffic, and by not using VPCs with dynamic bandwidth allocation, Carr would not be able to offer the same service guarantees with the same degree of efficiency. Carr is completely silent as to dynamic bandwidth allocation of VPCs.

In the office action, the Examiner combined Carr with Awdeh, but in the applicant's respectful submission that is mixing apples and oranges. Awdeh is completely silent as to the use of virtual path connections, which as noted above are quite different from physical links carrying multiple virtual channel connections, and there is clearly no teaching in Awdeh that would suggest dynamically controlling the bandwidth of virtual path connections so as to render them particularly efficient at carrying non-real time traffic.

Reconsideration and allowance are earnestly solicited.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read "Richard J. Mitchell", is written over a horizontal line.

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